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ABSTRACT

The proposed deployment of the National Research and Education Network (NREN) offers an unprecedented opportunity for shaping a new expression of civic and pedagogical culture. It can be a positive force for change or a regressive distribution of resources and influence to those already most in possession of them. To prepare for the NREN, the federal government should provide funds for hardware, software, training, and support, beginning with schools most deprived at present and ending with schools already rich in technology. Financing may, in fact, be the easy part of establishing the NREN. The harder part will be establishing the network in such a way as to preserve its ability to provide educational equity, and to use it as a Trojan horse to bring high-access technology into the schools. That technology is in itself a Trojan horse to bring about school restructuring through changes it can make in attitudes toward education. The introduction of the network will also bring into sharp focus issues of freedom of speech and network content. Implementing the NREN is part of engineering social change. Society must be ready to meet its challenges and define its responsibilities. (SLD)

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IMPLEMENTATION OF THE K-12 NREN: EQUITY, ACCESS, AND A TROJAN HORSE

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THE CLIMATE

As the first public works project of a post-industrial era that finds America more recumbent than ascendant, the idea of an NREN carries a lot of baggage as well as a lot of promise. We are told, or imagine, that it will be a component of remedies for educational, cultural, and economic decrepitude, that it will usher in a golden age of information, entertainment, and commerce. We're receptive to these kinds of promises, partly because we always have been and partly because the current situation is so awful. Decades of alternating intervention and neglect, of public-mindedness and myopic mean-spiritedness, have produced a fragmented society with widely disparate levels of political, cultural, and economic participation.

Nowhere is this disparity more painful, more glaringly egregious, more profoundly un-American than in the realm of public education. For a whole complex of reasons we fail to provide an astonishing number of our kids with the rudiments of education necessary to allow them any meaningful participation as citizens or even as consumers. For the children of the well-off as well as the poor, public education is by and large a moderately-funded exercise in ossification, an experience less of ontology than paleontology, the obsolescent embodiment of an aboriginally misplaced metaphor that produces not true citizens, but mere tax-payers. Yet despite the tenor of the current hand-wringing our schools are not 'failing'. On the contrary, they are doing exactly the job they were set up and refined to do. It is the world around them that has changed, and this mismatch between school and society is so blatant, so pervasive, its consequences for the nation so malignant and ineluctable, that a trans-ideological consensus has congealed around it: *something* must be done. Enter science (in the form of the NREN) our sturdy metaphor for progress and hence America's only true divine, now robed in the shimmering samite of access, girded by granite ribs of infrastructure.

Yet this time, perhaps, "progress" tells more than partial truths, and offers not another hieratic priesthood but a flat, radically democratic culture of participation. The proposed deployment of the K-12 NREN offers us as citizens, technologists, and educators an unprecedented opportunity to assist in shaping a new expression of civic and pedagogical culture. More than this, the decisions that are made or not made over access, equity, rights, and responsibilities will fully define the social, cultural, and economic opportunities of several generations of students. The NREN, as a policy

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design and a policy settlement, will have concrete, sententious consequences for our children. It can be a progressive force for change, equity, and restructuring or a regressive distribution of resources and influence to those already most in possession of them. These alternatives will depend on how it is construed and financed, how conceived and implemented, but in any case its impact on pedagogy will be profound. In the following pages I try to sketch an outline of some of the major issues and possibilities.

On its face, the NREN offers a relatively simple metaphor, that of the 'data superhighway', and it is on this level that most public discussion will likely take place. The NREN will be posited as facilitating the transactions and interchanges with which we're currently familiar as well as spurring the development of new products, new services, and new forms of communication. Like all new technologies, it will initially be thought of in terms of what it replaces, as was the telephone in terms of the telegraph, the car in terms of the carriage, the television in terms of the radio. As we and the technology acculturate one another new ways of living and thinking will emerge, and our decade of generalized experience with the microcomputer instructs us that the rate of emergence will be quite rapid. Therefore it's possible that something like the NREN and its progeny will quite literally restructure many of our social and productive relationships in a very short time. For this reason, and because a highway is fundamentally about access, our responsibilities under this metaphor are clear: to ensure that the privileges and responsibilities of access are evenly distributed to all citizens so that all may participate in the future we envision.

While this is a noble principle to which all can in good conscience subscribe, our record on the equitable distribution of resources will give many reason to pause. Those familiar with the habits of education bureaucracy will expect that effective new technology will be provided first to students who are perceived to be best able to 'take advantage' of it, to demonstrate its worth, and that only later, if at all, will it trickle down to the majority of classrooms. Historians and others with memories will recall that when the first vehicular superhighways were built they often disrupted or destroyed the neighborhoods of the working poor in order to afford the more affluent an easier transition between the new homes and workplaces the highways made possible. Still others will realize that to evenly sprinkle a new resource over uneven terrain does not create level ground. All of these concerns, and more, will be articulated and addressed during the debate over K-12 NREN deployment. This should encourage us to build into the implementation, on an administrative level, the best remedies we can for present as well as anticipated future inequities as they relate to technology access.

THE CONTEXT

As with the building of any road, the bed must first be prepared. It makes sense that while the NREN is being readied we prepare schools, administrators, and students to be ready for it. As an integral part of the cost of the NREN the federal government should provide funds, either to the states or directly to the districts, for hardware, software, training, and support. As a condition of the grants the states would agree to abide by a plan that ensures these resources go first and most to those most currently deprived and lastly to those already technology-rich. Although the wealthier districts will complain that they are the objects of discrimination, the rhetoric of com-

petitiveness, of preparing for the future, that has been so successful a spur thus far will eventually drown out their complaints[1]. Given that money will not be unlimited, and that putting three computers into each of 100,000 schools will accomplish little good, difficult decisions will have to be made about which poor, middling, and rich schools will get what. Since part of what we're talking about is a revitalization of public education, no NREN money should go to private schools.

If we want the technology to have any real impact we have to provide instruction and support for teachers and administrators, especially in those schools that do not have much genuine experience with computers. Since spending on support is more the exception than the rule, provisions for it should be hard-wired rather than discretionary. Support would include summer camps for K-12 teachers and administrators (selected according to a model that would prevent the traditional over-representation of white male nerd MIS types) to familiarize them not just with the basic use of the machines but with the new paradigms and possibilities for classrooms that the technology carries with it. Graduates of these programs would in turn be given the resources and support to go back to their schools and instruct others on a formal basis. All districts, regardless of the amount of hardware they receive, would be given this support, as well as the resources to set up ongoing workshops for parents and others in the community. As participants in these workshops become proficient they can be brought into the schools as resources for future trainings. We want the NREN, as a proxy for the schools, to be embraced as a community resource. We want the schools to be seen as being once again in the vanguard of change and progress. By involving those who might not normally participate as initiators (parents, teachers, street-level bureaucracy) we establish a commonality of interest and a reservoir of good will that we can then draw upon at some later point. Putting a computer and a telephone on every teacher's desk will practically guarantee NEA support for whatever else we propose. Schools of education, again as a prerequisite for NREN participation of their parent universities, would be required to develop teacher-training programs that stressed not just computer proficiency but an understanding of the educational, cultural, and philosophical paradigms that accompany different technologies. This curriculum would permeate all aspects of their training: courses in pedagogy, administration, testing, etc. would all reflect an awareness of the enabling interrelationships between cultures, their values, and their technologies. A clearing-house for information about the next generation of educational and network access software is desperately needed and not very expensive. It could easily be funded by the software publishers themselves and include lesson plans, support materials, and other helpful hints developed by and for teachers.

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1 It's crucial that the public be persuaded to pony up on the grounds of competitiveness, patriotism, job growth, and investing in 'our' children. Appeals to equity should not be overt, and when made should be couched in terms of 'fairness'. Otherwise, the plan will be seen for what it is, a change in the existing scheme of resource distribution, which would probably not be felicitous.

THE EASY PART: MONEY

We are talking about a significant amount of money. Aside from the cost of the NREN itself we need to provide hardware, software, LANs, training, and support for millions of users in a hundred thousand schools. There are a number of reasons why the federal government should supply (or be the conduit for) most of the funds, and a number of ways to make that possible. First, the new administration will need and want to move decisively to 'rebuild America' in tangible ways that have moral overtones. Its 'New Covenant' requires that it, as well as we, engage the productive public good. My hunch is that the NREN will be the project chosen to embody that policy. Since the NREN will make America strong, money can be allocated from defense savings. Since it will bring America into the future, money can be allocated from the NSF and space programs. At once technologically advanced and egalitarian, expressing immanence and practicality, the NREN is patriotic in the good old nineteenth century trans-ideological sense, and so service as an instructor in the training programs and summer camps mentioned above should qualify one for student-loan forgiveness. Best of all, the NREN, unlike a billion dollar supercollider, is in everyone's district, so everyone can support it. And, since the NREN is for all of our children, everyone should be encouraged to support it via an elective $10 check-off box on 1040s[2]. The NREN is rural electrification, the space program, and the Peace Corps, all rolled into one, and the rhetoric should reflect that.

Yet however much it costs, however much public money is spent on it, there is ten times that amount to be made in the private sector every year from industries (born and unborn) enabled by the NREN and its offspring. Add together current revenues from all forms of entertainment, communication, publishing, advertising, and transaction processing fees and you have only scratched the surface of the money it will generate. Every industry with a potential stake already knows this, and they will line up to give money if properly encouraged. This encouragement could take the form of tax incentives to donate or sell at cost all of the hardware, software, and LAN equipment required to give schools high-access[3]. R&D and investment tax credits would also be appropriate, while some type of participation might actually be mandated of those most likely to profit from the NREN, like the rbocs and long-distance carriers. Deregulation (or refrain from re-regulation) could be offered in exchange for the participation of relevant industries. Small and limited excise taxes, on the order of 1%, might be imposed on electronic transactions or the sale of computer equipment, just as tolls, gasoline taxes, airport departure fees and the like support our other forms of transportation. More popular still would be the imposition of an NREN-supportive 'exit tax' on companies moving certain types of jobs offshore.

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2 If it's just one dollar no-one will elect it. People need to feel like they're making an investment, not a contribution.

3 We need to set high minimum standards for fast I/O, expandable machines fully capable of distance multimedia and telepresence. No Apple IIs, 286s, or LCs need apply. On the other hand, for substantially less than $75 dollars per unit we can provide every student in the country with a modern lunchbox ('CommBox', perhaps?) that connects to their home TVs and phone lines and gives them and their parents on-line access to the school and national nets. Kids can do homework and research and parents can check the school BBS for reports and guidance on what's going on with their kids, their school, and their community. They can leave messages for teachers and administrators and respond to questionnaires. CommBoxes would be modular, with different keyboards for different ages and different software in ROM to provide assistance or limit access as appropriate. Since there are no moving parts and no display the 'Box is light, sturdy, really cool-looking (NikeBox, SwatchBox), and ubiquitous. All kids in all schools can have something substantial in common. Their parents can have in common something insubstantial but not insignificant: access and input.

THE HARD PART: VALUE

If we think of the NREN only on its simplest level, the 'data superhighway' there is little doubt as to the outcome. As technically complex and fiscally tendentious as its establishment may be, it, or something very like it, will come to pass. It may take longer, it may exacerbate inequity, but it will happen even if it has to be financed entirely in the private sector. And, in time, some benefits will in fact trickle down. What is far less certain, and far more difficult to engineer (since it constitutes social engineering) is implementing a K-12 NREN in such a way that its unique, unprecedented cultural aspects are preserved in the classroom, and that it is used to bring about the revolution it truly contains. As far as I'm concerned the real value of the NREN is its service as a Trojan Horse bringing high-access technology into the schools, and that that technology is itself a Trojan Horse for school restructuring. High-access microcomputer technology carries along with it (contains, embodies) attitudes towards teaching and learning which are fundamentally at odds with those of the school and classroom with which we've all grown up. Like those of earlier technologies these attitudes are not antecedent cultural values *per se*, but rather the consequences of the way the dominant cultural machine metaphor organizes, structures, and processes work and information[4]. This has ontological consequences for the culture and especially for the schools, whose job it is to reify dominant (machine) values in a particular flow of information, processes, and authority such that those values are efficiently reproduced. The form, the medium, and the content of education are intimately tied up: the 'hidden curriculum' (not necessarily as nefarious as it sounds) is their sum minus overt content.

Many in the new generation of educational technologists are eager to bring high-access technology into the classroom for precisely this reason. They embrace it not because of its efficiency (which is the industrial value that will probably linger the longest in the post-industrial age) but because its presence will force a cultural sea-change in the classroom. They feel that its *modus operandi*, when expressed as a set of values, will create a different kind of citizen out of teacher, parent, student, and administrator. They see in the organization of this technology the potential for an expression

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4 The desire to apprehend the complexity of the world in which we live, to encompass it in a more immediately accessible form, gives Western culture the long albeit narrow history of mechanical and neo-mechanical metaphor. The shift from one metaphor to another generally lags technology itself by a generation or so, and each shift to a new metaphor drastically affects the way cultures view the natural and human worlds.

Until the fourteenth century there were no such metaphors. Indeed, the rope of nearly all metaphor, metonymy, and analogy was tied to the natural or supernatural, rather than the created world, simply because there were no complex machines as we know them today. The invention of the astrolabe, and its close and quick descendant, the clock, provided the first tangible human creation whose complexity was sufficient to embody the observed complexity of the natural world. It's at this time that we start seeing references to the intricate 'workings' of things and of their proper 'regulation', usually of the cosmos and nature, although occasionally of human systems as well. The clock, with its numerous intricate, precise, and interlocking components, and felicitously able to corporealize the abstraction of time, shaped western perceptions of the world by serving as its chief machine metaphor for the next five hundred years.

In the early nineteenth-century, the metaphor of the clock came to be gradually replaced by that of the engine, and somewhat more generally, by the notion of the machine as a phylum unto itself. The figures shift from those of intricacy and precision to those of 'drive' and 'power', from regulation to motivation. In the early twentieth-century, as technology became more sophisticated, the concepts of

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that is radically more individual and democratic than what it replaces. If they are honest, they admit that introducing the technology and allowing it to work its transformations (with some discreet assistance) is easier than establishing a difficult consensus over what the values of the school should be. The most important lesson to be learned from the Reagan Revolution is that administrative procedures can shape policy more widely, more easily, and more quietly than can publicly-debated legislation and policy.

Even if we put aside for a moment the contradiction of means and ends inherent in this position it's not difficult to foresee a lot of problems. Many parents, teachers, and administrators will have strong, if ill-defined objections to the types of change that accompany high-access NRENing. Most obviously, the classroom will become a lot less rigidly defined. For part of the day it may cease to exist as we've known it: if some kids are linked to others thousands of miles away with their instructor/moderator/supervisor in yet another location, where exactly *is* this virtual classroom? Are the remote teachers credentials acceptable to the student's home state? Who gives the grade? Who approves materials? Who is responsible for classroom behavior? What meaning does 'local control' have in cyberspace? All these questions, and dozens of others, speak to the discomforting experience of replacing one educational model with another whose values are in many ways diametrically opposed. Much of what we call "school" has to do with the ordering of things and with lines of authority. That is a great many things, and all them will change. Expect resistance. While the current feel-good school rhetoric of flexibility, lifelong learning environments, supportive outcomes for change, and students constructing their own knowledge fairly drips with human potential (and apotheosizes what Orwell referred to as reduced expectations for language) it mostly serves to reassure 'professional educators' that they are unique and valuable and always have students' best interests at heart. In fact, when its meager authority is correctly perceived to be encroached upon, the poorly-paid semi-skilled labor that oversees most classrooms will fight like hell to maintain some semblance of the status quo. When that time comes, expect to hear a lot less from 'stakeholders' about 'supportive climates for change'.

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motivation and regulation were to some extent merged in the figure of the self-regulating machine. This is essentially the dominant metaphor with which we've grown up, the notion of a 'system' which contains the means of both its perpetuity and its governance, and it has been applied to everything from political science to nature to the human body to the human mind. The enginic 'drive' of the Freudian unconscious, Darwinian evolution, and the Marxian proletariat give way to 'family systems', ecosystems, and political equilibria as the Industrial Revolution lurches to a close.

I'm speaking here of dominant metaphors: certainly there are others that have been employed in more limited (and more transient) contexts. For a mechanical metaphor to dominate, however, it must be linked to a fundamental technology, one which enables others, as the engine enables the truck, the refrigerator, the factory, and the merry-go-round. Any one of these may make for an apt analogy, but none of them reverberates widely or deeply enough to become a dominant metaphor. A significant liability of mechanical metaphors is their inability to encompass values other than, well, mechanical ones. The only appropriate measure of a machine or a system is its efficiency, the conversion of inputs into outputs with as little waste energy as possible. Whether that conversion is desirable or undesirable is not a consideration for judging the worth or quality of the machine, which abides completely in the realm of means. Thus, we can (indeed, must) speak in identical terms of the efficiency of a fascist state or a child's classroom. An additional problem with all non-quantum mechanical metaphors is that they poorly express relationships that lack clear cause-and-effect, or those that depend upon probability. While twentieth century physics is largely an attempt to deal with precisely this limitation, even most

The coming of computers to the workplace can pose real threats to the dignity and autonomy of those who work with them: more than ten million Americans (the only nation in the world where this occurs) are subjected to continuous demeaning and debilitating workplace surveillance through their computers and headsets. While monitoring and surveillance will not take this form in schools, we should nevertheless be concerned enough about the possibility to mandate protection in the NREN charter for schools. Part of the appeal of district- and state-wide networking for administrators is the promise of easy compilation of extremely detailed records of student and teacher performance and behavior. The obvious concern is the confidentiality of this information, but perhaps more important is the degree to which incorrect and/or inappropriate information, once codified, digitized, and locked away from inspection out of a misplaced or disingenuous concern for 'privacy', will pervade academic careers. Imagine all the problems of this type that currently exist, raise them to the power of credit bureaus, and the potential for misuse becomes clear.

What concerns me more, however, is the degree to which students' and teachers' computer activity may be logged. There will be a strong tendency to collect as much information as possible simply because it is possible, and figure out what to do with it later. Some of this collection and analysis may have facially benign intentions, especially when performed in aggregate at the district and state levels. When the K-12 NREN is new there will be much curiosity and pressure from all quarters (not least from academics and researchers) to see what use people are making of it in order to assess and to justify all that money and all that change. Yet there is much that some might want to know that they should not. Which particular USENET groups are read, which databases searched, which individuals and organizations corresponded with, should be no more a proper object of state concern than the history of an individual's library borrowing, a list of their magazine subscriptions, or addresses and transcripts of their mail. Yet even organizations that would not dream of eavesdropping on employees' telephone conversations think nothing of reading their E-mail, and many universities, while putatively subscribing to principles of academic freedom, regularly violate those principles when it comes to electronically-mediated information. The U.S. Supreme

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college graduates do not intuitively understand Newtonian mechanics, and it's unlikely that this will become a popular mode of structuring our perceptions for several hundred years.

The edges of a new metaphor for complex systems can be seen emerging, however, one which is able to embrace the relativity and immanence which stress mechanical metaphors to the point of fatigue: that of the computer and its data networks. We see, and will see more, shifts away from the concepts of drive and regulation to those of processing and transmission. The raw material upon which processes act will be regarded not as objects and forces but as data, which is not a thing but immanence itself, an arbitrary arrangement given temporary and virtual form. The action itself will be seen as a program, a set of instructions, allowing for more or fewer degrees of freedom. The interrelationships of things will be embodied in paths, arrangements, and pointers rather than linkages (creakingly mechanical) through which objects transmit force. Distinctions will be made between hardware, that which is fixed/infrastructure, and software, that which determines use and function. This has tremendous consequences for our notions of property, of originality and authorship, of privacy and relationship. It may, perhaps, be less limiting than the mechanical metaphors it will largely displace.

Since the rate of technological change is now accelerating exponentially, I imagine that the rate of language change will also accelerate, although never as rapidly. Give it five to ten years before the data/processing metaphor dominates social science jargon, fifteen years for it to become common in daily speech.

Court, always slow to respond to the implications of new technologies, has recently asserted that Americans enjoy no inherent right to privacy but only a 'reasonable expectation' of it, and so the ease with which the privacy of K-12 NREN users can be violated will be compounded by the reasonable expectation of an authoritarian *in loco parentis* character for schools. The irony, of course, is that the ease and freedom of movement we enjoy in cyberspace is equalled only by the clarity of the traces we leave for those who care to look for them. All our experience tells us that when it comes to information, ease of collection is its own justification, and that when boundaries are easy to violate they will be. That fact that something is possible does not make it right, and we owe it to the students and teachers who work and play on the NREN to provide them with statutory protections of privacy and freedom of speech and information that is at least equivalent to what they would enjoy in non-virtual space.

CHOOSING SIDES

Those of us who want to link the classroom to the NREN do so because we feel that the net has much to offer the school in the resources it provides, the values it embodies, and the behavior it encourages. But when these values are fundamentally at odds with those of the school and something must yield, when push comes to shove and control comes to delete, we will have to decide which sets of values we wish to compromise least; we will have to choose sides. There are several areas where fundamental conflict could arise. USENET, for instance, is characterized by a certain democratic anarchy. No one group determines its content, and its structure is more endo- than exoskeletonous. Since it provides common carriage users, rather than USENET, are responsible for what is posted there. Freedom of expression is paramount, and few imagine or wish for the right to determine what others read. Despite the diversity of its constituency on-line behavior is controlled through shared cultural values and peer pressure: there are no real net.cops, no sanction other than the threat of being ignored, and no authority to fear or to petition. One is judged mostly by the content of one's speech, and these attributes are non-local. The culture is flat, without hierarchy. It is, above all, a place of free speech and free association.

None of this is true of schools as presently constituted. School speech is hierarchical and rigidly controlled. How many teachers even have phones in their classrooms? How many can choose their own materials? Authorities at every level from Capitol Hill to the elementary school lunchroom will feel a strong need to control what information flows into and out of the classroom. Districts and states will decide piecemeal what their students may read and with whom they may communicate, and may even attempt to limit what information flows through their state[5]. It's not just a question of whether teachers and students should be able to read alt.sex.hamster.duct.tape

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5 States have fought vigorously for the right to bar or restrict certain materials from their portion of the interstate highway system, and all states are permitted to regulate traffic and impose differential tariffs through licensing fees and permits. The interstates are patrolled by state police. While no jurisdiction can be compelled to make particular material available to its students or teachers they must be made to accept principles of common carriage for their portions of the NREN. Otherwise the locality with the most restrictive policies will unilaterally determine the content of the entire net.

on the state's dime, let alone the rantings of Holocaust revisionists, the abortion flame wars, or the recipes for pipe bombs and amphetamines. It's a matter of whether the states will have the courage to affirm the concept of protected speech, or whether they will need to be in some way compelled to do so[6]. The net as we now know it is the antithesis of political correctness and family values and the apotheosis of free and protected speech. I don't relish the inevitable 'national discussion' that will take place when people become aware of what their tax dollars pay to propagate, when freedom of the press threatens to be practiced as a commonplace pastime of the citizenry. Perhaps during this polite and reasoned conversation we'll re-discover the virtues of plurality, the America of Paine, and Jefferson, and Whitman, and Woodie Guthrie. Perhaps the opening of a new frontier with room to move and breathe and the freedom to re-invent oneself in the tremulous American interstices between isolation and community, between exuberance and contemplation, will reveal to us how truly much we value our diversity and the respect for it that binds us together. Perhaps you'd be interested in this bridge I have for sale.

As soon as people become aware of what's available there will be a stampede to protect our children from the net. Issues of network content will be a magnet for all the discomfort produced by the shifting of society from a more hierarchical to a more flat disposition of authority and legitimacy. Conservatives, frustrated by their loss in the election and peeved at the new call for diversity and tolerance from within the Republican party will rally to show just what a Democratic administration would foist on our children. It will take more guts than Congress has been wont to show to resist their pressure, and when the focus widens to encompass the content of the net itself we will need to worry about protecting the net from our children.

"NOTHING IS HERE FOR TEARS"

The new administration has an incredible opportunity to foster positive change on its watch. There are a lot of goodies in the NREN plan, more than enough to go around, enough to give everyone a substantial interest in its success. K-12 NREN funding must not cannibalize other areas of education. If we are to have the full support of every component of the educational establishment from teacher's colleges to the NEA to textbook publishers it must be an expansive program that comes at no-one's expense. Society is ready to shift resources from other areas to education and, as the success of local technology levies has shown, can be persuaded to pay for them. We have a military-industrial-information complex that is aching to play on national fast fiber; they can be cajoled, persuaded, and publicly shamed into setting aside a strand or two for the future of the nation and all its children. If we learn anything from the 'eighties it should be that fearlessness in pursuit of an agenda is its own defense. Let us not be disingenuous: we are engineering social change, and we should seize the opportunity as emphatically as we define our responsibilities. Someone will make this policy, some hands will shape this future more than others. Ours are clean; we should put them to work.

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6 You could attempt to preempt some controversy, by not carrying the alt. hierarchy, for instance. But the first time a fifth grader shows a third grader how to telnet over to a less restricted site the jig is up and the whole net is at risk danger of parental supervision.